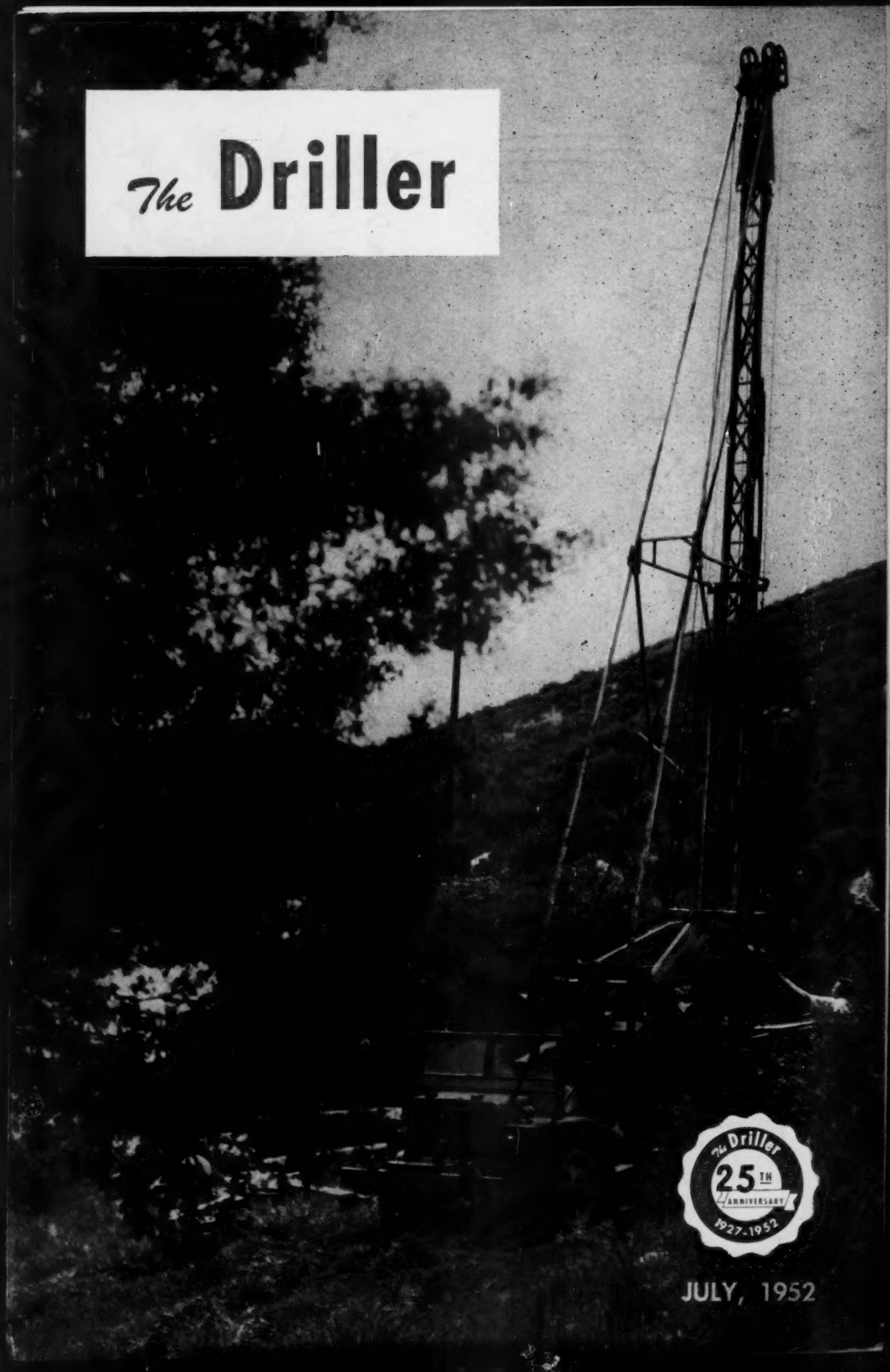
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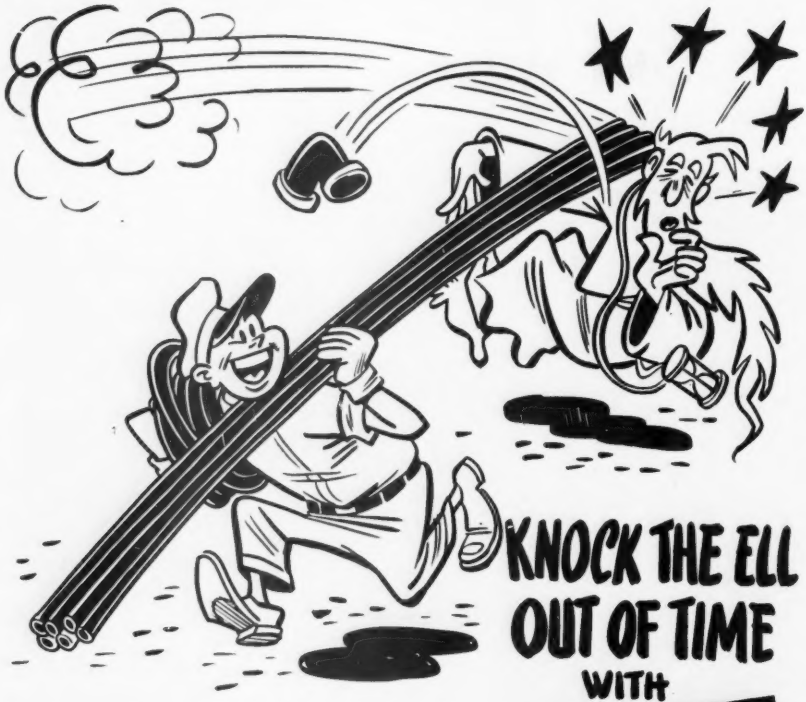

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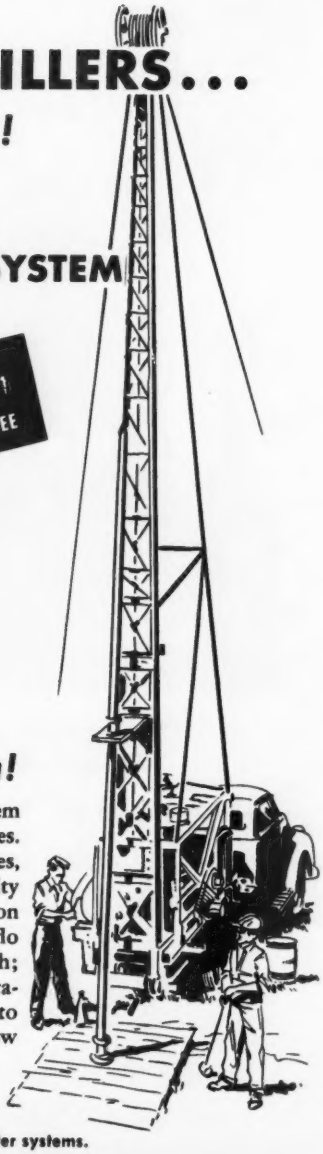

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THE WELL DRILLERS LINE

The Driller

THE MONTHLY MAGAZINE FOR WATER WELL DRILLERS
Founded 1927

Vol. 26 — No. 7

July, 1952

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Published every month by Excavating Engineer Publishing Co.
South Milwaukee, Wisconsin

E. M. Heuston, Publisher

G. R. Wenzel, Editor — **M. B. Jaeger,** Managing Editor

W. J. Walsh, Consulting Editor — **H. A. Burkhardt,** Sales Manager

Address Communications to: The Driller, South Milwaukee, Wis.

Subscription price $1.00 per year — Single copies 25 cents

Canada and Foreign, $2.00 per year

Free to water well drill contractors and operators. No subscription, paid or free, can be accepted unless the subscriber's occupation is given. Right is reserved to refuse foreign subscriptions. Volumes available on microfilm.

Geologist Ed Zielbauer, left, and Hydraulic Engineer Ed LaBahm look over sampling and progress record kept by drillers on the project.

California's Fresh Water Dike Experiment

By Ray Day

Part II: The Experiment

Hydraulic properties of injected fresh water studied by California Engineers as drilling gets under way at salt-threatened location.

THE serious encroachment of salty sea water into the underground coastal water basins of California from Mexico to Oregon has now resulted in experimental work, following the engineering considerations detailed in Part I of this series. Drilling is now under way at Manhattan Beach, on the West Coastal Plain of Los Angeles County, to sink the first of what may ultimately be 34 injection and test wells along the seacoast.

The tests are being conducted by the Los Angeles County Flood Control District, acting as the contracting agency for the California State Water Resources Board. The State engineer and the staff of the Division of Water Resources, is planning and supervising the work for the board. The Flood Control District is renting drill rigs from M. R. Peck & Sons, Gardena, and from C. A. Rock of Costa Mesa.

Although several agencies and many individual water districts and municipalities had previously tried to rebuild underground water levels

with injection wells, the first serious experiments along this line were made from April, 1950, to February, 1951, by the Los Angeles County Flood Control District.

Costing about $85,000, these experiments included field tests by surface spreading near El Segundo and Redondo Beach, and the injection of fresh water into the confined pressure aquifer through an abandoned well near Manhattan Beach. The latter test, closely simulating the present work, was conducted late in 1950 and formed a basis for further experimental activity now under way.

Alternate Study Planned

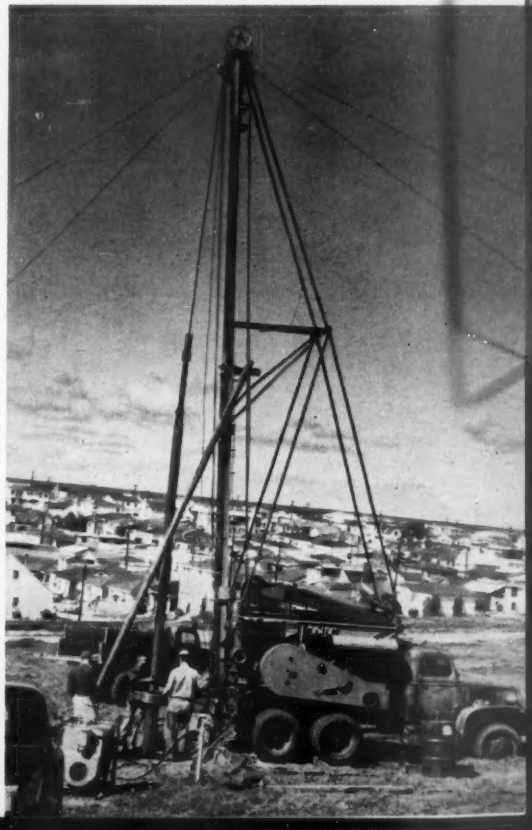
The $750,000 appropriated by the Legislature in 1951 is being used not only for the field experimental project at Manhattan Beach but also for laboratory research studies of the basic factors governing sea-water intrusion and its prevention, by the University of California, both at Berkeley and Los Angeles. Should sufficient funds remain upon completion of the present phases of the program, other means of preventing sea-water intrusion, such as earthen cutoff walls and chemical grouting, will be investigated.

Among the most important factors to be investigated at the Manhattan Beach field experimental project are: Necessary spacing of wells to build up a pressure ridge which will be effective in preventing sea-water intrusion, and amount of water which must be injected to build and maintain such a pressure ridge.

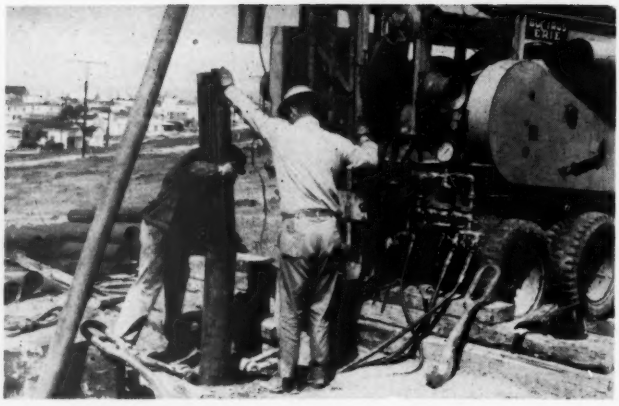
Answers to these questions in relation to the properties of the aquifers, such as thickness and permeability, will be sought. There is also interest in the overlying sediments to the extent that they act as a confining member for the aquifers.

Another basic problem the engineers are looking into is the practicability of the entire project, and they aren't guessing. Present work is being conducted with an eye on the limitations of all methods used, and how those limitations can be reduced or controlled. The availability of a water supply for the job and every economic factor must be checked carefully.

The engineers have now determined, on the basis of the 1950-51 test work, that several things will decrease any recharging or injection efficiency. Bacterial slime, caused by the growth of biological microorganisms, will cause the rate of percolation to decrease, and the answer to that problem appears to be the



A bailer or "mud scow" full of muck comes up to be sampled by geologists and discharged. Excellent progress was made by this method of drilling, and over 100-feet a shift was turned out by the 24-L.



At start of "mud scow" sequence a 4-foot section of "stovepipe" liner is fitted.

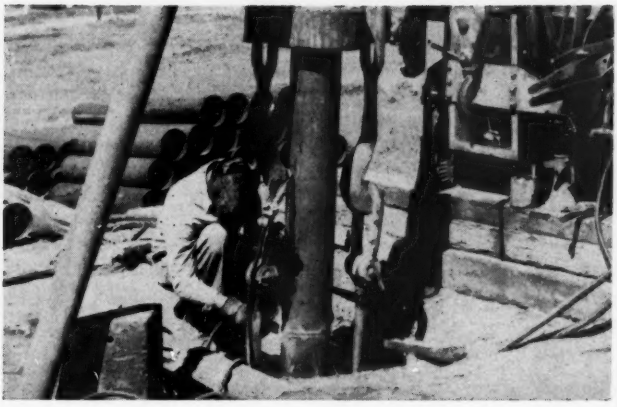
The liner has slid halfway down on the taper and pulling cap is now in place. Driller E. P. Kent, Jr., right, is raising the hydraulic jack pistons to catch the pulling hooks. His helper is William F. Norris.

injection of 15 ppm of chlorine with the water. Another factor to consider is the air lock due to entrained air being carried into the aquifer by the plunging water. The deposition of suspended solids, as well as calcium carbonate deposition due to unstable carbonate balance, must all be checked. And engineers now know that bad base exchange reactions take place between the ionic constituents of sediment and water.

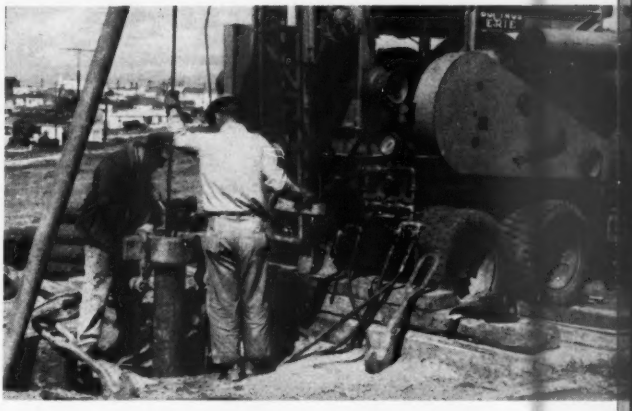
First Wells Drilled

When *The Driller's* field representative investigated the work at Manhattan Beach, five wells of the first block of eight had been drilled. Eventually there will be 34 wells in the Manhattan Beach string. Twenty-five of these wells will be 8-inch check holes where water levels, salinity samples and so on can be checked. Nine of the wells will be of 12 inch diameter and will be used for injection purposes. The wells are being drilled from 220 to 450-feet deep.

Only five of the nine 12-inch wells will be developed and used for injection initially, the other four to be used as observation wells. Should it be found that the injection wells must be spaced closer than 1,000



Pulling device now in place, Kent uses an arc welder to fill the narrow crack in the liner joint.



The liner is pulled down by the hydraulic jacks simultaneously with drilling, which in this case consists of picking up the mud with a flat-bottom bailer. The driller's helper puts water in the hole with a hose.

feet, the other four 12-inch wells will be developed and used for injection thus giving a spacing of 500 feet.

Because of the difficulty of buying property rights where drilling was to be done, as many of the wells as possible were spotted on the Santa Fe Railroad right of way in Manhattan Beach. The check wells, of course, must be placed in some cases at right angles to the injection holes, so that the shape of the pressure ridge can be accurately determined when injection starts.

As engineers considered the problem, the more they realized that cable tool drill rigs would be preferable on this job. The use of rotary rigs with drill mud was too likely to leave the porous water-bearing sands and gravel plugged, and it was therefore natural to choose the cable tool method to leave the gravel and sand in approximately the same condition as before drilling. Both M. R. Peck & Sons of Gardena and C. A. Rock of Costa Mesa owned cable tool equipment, and the machines were rented on a force account basis.

Rock is using a shop-built walking beam rig with cable tools, and M. R. Peck has moved a Bucyrus-Erie 24-L

truck mounted machine in to handle his part of the work. The machines are furnished with their regular operators, and both drillers take care of their own fuel and lubrication service.

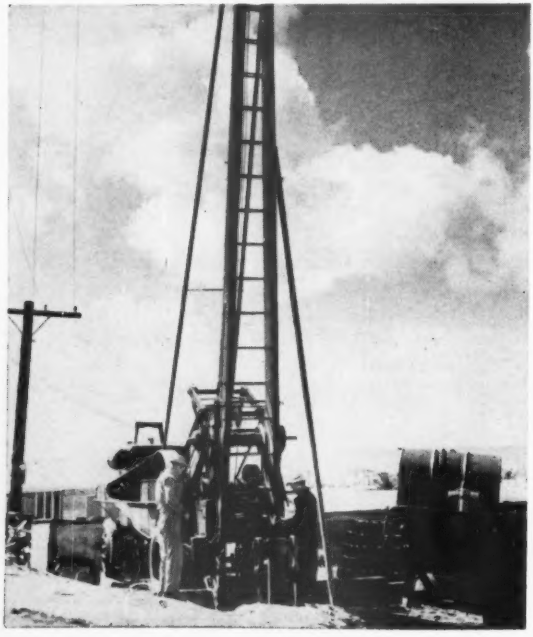
"Scow Method" Used

Both drillers are in some respects giving the engineers an unusually good well, considering that both are using the "scow method" of drilling. This method is popular in California particularly, and is often used when sand, gravel or earth is found.

With the scow method, the steel well casing is pulled down with the aid of sunken hydraulic jacks, and the muck is removed with a large flat-bottomed bailer so designed to barely clear the casing. Four foot sections of stovepipe type well casing, fitted together and welded in those increments, makes the method one of the most rapid in use in the West. Using this method, Peck has turned in as high as 110 feet in an 8-hour shift with his 24-L.

On an 8-inch hole, two hydraulic jacks are usually enough to pull the casing ahead. The jacks are fastened to steel H-beam deadmen, sunk in an anchor hole 8 x 16 ft. wide and 7½ ft. deep. These holes are dug by a dozer or clamshell. In the Manhattan Beach tests a clamshell was used, since the Los Angeles County Flood Control District had a machine at the site.

To minimize the frictional drag on the casing as it is pulled down, a special shoe from ¾ to 1¼-in. bigger than the casing diameter is used. The 4-foot stovepipe joints, furnished by Roscoe Moss of Los Angeles, are set in place by the driller's helper. A heavy pulling cap with lugs is set over the top of a joint, and its lower lugs attached to the hooks on the end of the pistons of



The second drilling machine which the state and county hired on a rental basis was this shop-built walking beam rig owned by C. A. Rock of Costa Mesa. That's Rock himself in the driller's position.

Completed wells will be covered like this for safety. Here William Andberg, left, and Dave Tong are taking samples. A check will be kept on depth and salt content.

the hydraulic jacks. The jacks are set for 4-feet of travel, and as the joints fit together during the pull they make a double-walled liner section with a weld every two feet. A Hobart welding machine and Lincoln Fleetweld No. 5 rod is used at the drill to close up these joints. The lining is pulled down in exactly the same manner as a tunnel heading advances when a pressure shell is used, and the muck is simply bailed out by the "mud scow," or flat bottom bailer.

Formations Studied Earlier

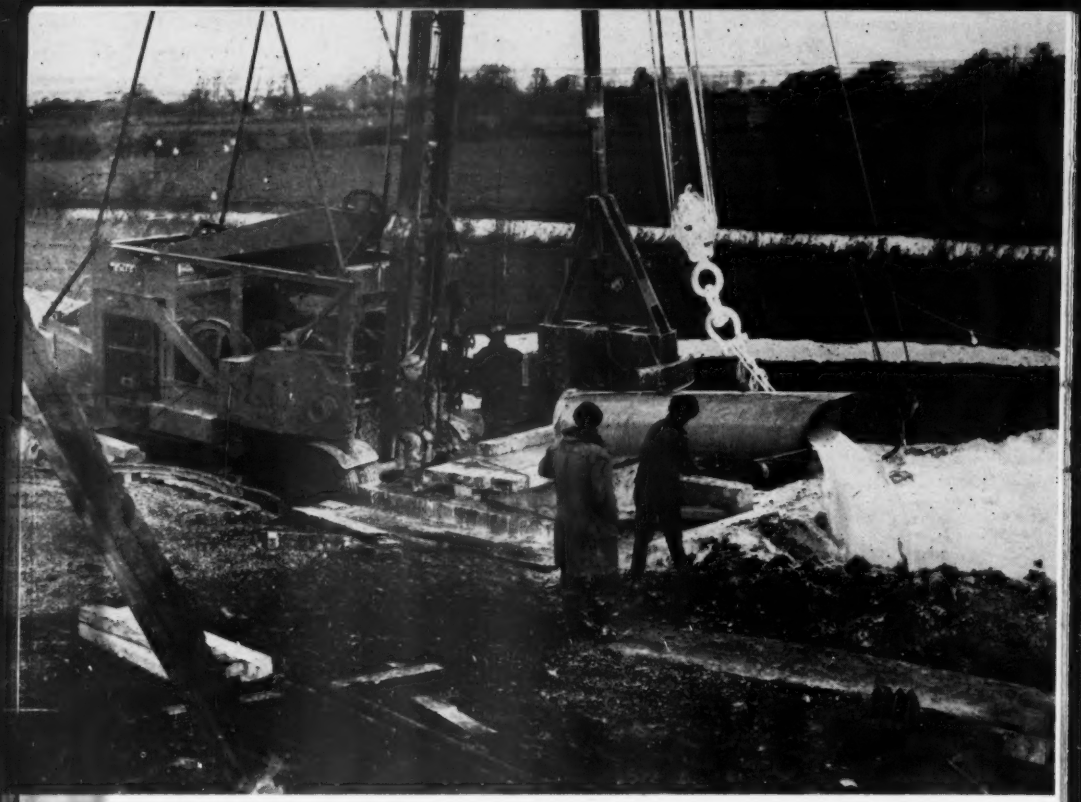
The formation at Manhattan Beach is typical of the California coastline and is quite interesting from a driller's standpoint. Past studies by the U. S. Geological Survey and the California Division of Water Resources has shown that the important water zones, which inland from the coast are thick and separated by sandy silt or clay intervals, begin to merge as the coastal margin is approached. At Manhattan Beach this merged zone is known as the "Merged Silverado." It includes phases of other Pleistocene aquifers, such as the "200-ft. Sands" and "400-ft. Gravels." The merged zone is over 500 ft. thick south of Redondo Beach, but only 50 to 75 ft. at Manhattan Beach where the experimental work is now being done.

Covering these water bearing sands and gravels is a thick formation of light gray and brown material known as Oakley fine sand. It occurs here as wind-blown or dune material, and is an excellent formation for the scow method of drilling to penetrate.

The project is only experimental and is designed to determine whether it is physically, hydraulically and economically feasible to prevent sea-water intrusion by creating a pressure ridge in confined aquifers by injection of water into the aquifers through wells. Out of the experiment, it is hoped, will come information and data which may be valuable in designing full scale projects involving the injection of water.

The concept and location of the Manhattan Beach field experimental project have no relation whatsoever to what may one day be a full scale project for prevention of sea-water intrusion along the entire coast line of West Coast Basin in Los Angeles County, if it is found that the pressure ridge method is to be

(Continued on page 27)



Six-Foot Diameter Well Drilled in England

2,000,000 gal. per day is the goal of drillers in putting down 280-ft. well for British borough.

Reprinted from the Poole & Dorset Herald

THEY'RE doing it big in England, to get water, where a well 72 inches (that's six feet) in diameter is being drilled with a Bucyrus-Erie 36-L drill for the Borough of Poole.

Special tools had to be fashioned, of course, and to accomplish this, F. Smith and Son (Grimsby) Ltd., contractors on the job, designed a bit that was made for them by a ship repairing firm. The bit is adjustable from 70 to 85 inches in diameter and was used with a seven inch diameter stem, without drilling jars.

Chalk and occasional flints abound in the area around Sturminster Marshall and in a 10 hour shift the rig drills from 6 to 10 ft.

The completed well will augment Poole's water supply by 2,000,000 gallons a day. Before the job is completed the drill will go down 280 ft.

At the time of this story (Dec.,

Shown bailing the enormous well are, left to right, H. Kirk, helper; W. Bickley, assistant driller; J. Shipp, foreman driller; and S. Rymonowski, local helper. At the time of the photo a depth of about 90-feet had been reached.

1951) the machine had gone 98-feet below the surface. The top 180 feet of this 6-ft. well will be lined with steel cylinders.

This work is the result of Poole Corporation Water Undertaking realizing some years ago, that to meet the ever increasing demands for water another source would have to be found.

The site at Sturminster was selected and was confirmed by a consulting geologist. The site was subjected to a survey which more or less pin-pointed the most promising area for exploration.

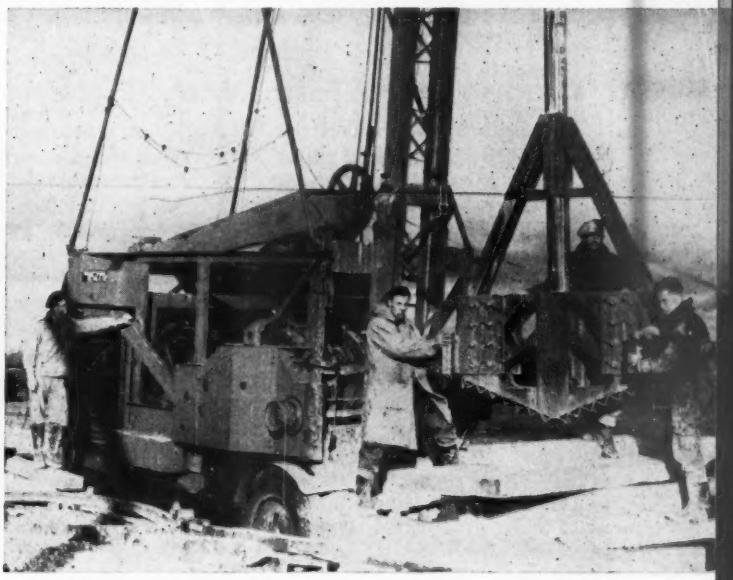
Acting on this information, a 10-inch trial hole was drilled to a depth of 300 feet, the sanding level was 22-feet below ground level and a seven day continuous pumping test yielded 15,000 gph from a stationary water level 28-feet below ground level.

Estimated Cost $300,000

The next step was to submit to the Ministry of Health a comprehensive scheme which embraced the following: The addition to the Undertaking's area of supply of the parishes of Sturminster Marshall, Shapwick, Lytchett Matravers, Wareham St., Martin and part of the parishes of Morden and Lytchett Minster. The construction of a well at Sturminster Marshall, together with machinery, pumping station, filtration plant and so on, and the laying of mains and connections.

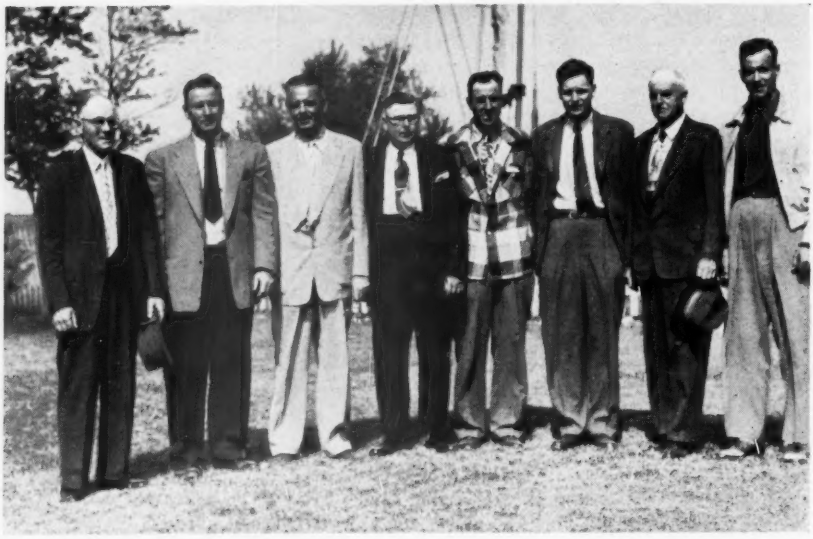
Cost of the work, including buying the necessary land, was estimated at $300,000 (£146,000).

Conclusion of the scheme embraces the construction of a 3,000,-000 gallon capacity reinforced concrete reservoir to be sited at Lytchett Matravers, and the laying of a new 16-inch trunk main from there to Upton Cross.



Here the crew, foreman Shipp in center, poses with the adjustable bit, set at 72-inches for this job. A ship repair firm was commissioned to manufacture the bit.

NEWS of the month



First officers of the newly formed Ontario Water Well Drillers Assoc. are shown after their election. They are, left to right: W. L. Fields, Vineland, president; I. G. Lounsberry, London, vice-president; L. W. Kidd, Tillsonburg, secretary-treasurer; and directors F. C. Hammond, Huntsville; Elmer Hoover, Aylmer; C. D. McLean, Ottawa, Frank Harrison, Thornhill; and Don Featherstone, Caledonia.

Ontario Assoc. Forms with 77 Charter Members

The Ontario Water Well Drillers Assoc. got off to a good start, May 31, at the open house held for that purpose by Tillsonburg Pipe and Supply Co., Ltd., Tillsonburg, Ontario, Canada. More than a hundred drillers were in attendance.

A small group that arrived in the morning selected J. Fraser, driller for B. A. K. Smiley, Madoc, to act as temporary secretary-treasurer for the day, for the purpose of collecting dues from the new members and otherwise to assist in getting the group under way.

The formation meeting was held at 2 PM, Don Willits, water well inspector with the department of mines, presiding. Tillsonburg's Mayor Anderson welcomed the group and extended an invitation for their future meetings to be held there. A. K. Watt, Provincial Geologist, said that as a group strides could be made to improve drilling conditions and service to customers better than as individuals.

Others introduced were H. Tonkin, Toronto, assistant geologist, R. Hayward, Toronto, water well inspector, and L. W. Kidd, President of Tillsonburg Pipe and Supply Co. who was host to the group.

Election of officers followed these short addresses with Harold Armstrong, secretary-treasurer of the

Michigan Water Well Drillers Assoc., advising on procedure and otherwise offering suggestions of future use to the group. Both Mr. Armstrong and his wife, with their many years of experience in handling conventions and business for their own association, gave generously of their time and efforts to the new association.

Newly elected officers are W. L. Field, Vineland, president, I. G. Lounsberry, London, vice-president, and L. W. Kidd, Tillsonburg, was unanimously acclaimed secretary-treasurer. Directors were elected by district in order to have officers from various parts of the province.

Directors elected from five districts are: C. D. McLean, Ottowa, Ottowa district; F. C. Hammond, Huntsville and F. Harrison, Thornhill, Peterborough district; D. Featherstone, Caledonia, Jarvis district; E. Hoover, Aylmer, Aylmer district; and F. Davidson, Wingham, Wingham district.

After the business meeting the group inspected the machinery and parts at the Pipe and Supply Co. and watched a demonstration put on by Bucyrus-Erie Co. representatives with a new 20-W rig. The rig was awaiting delivery to S. R. Gill, Hamilton, its new owner.

A social gathering concluded the day's proceedings with refreshments being served by host L. W. Kidd.

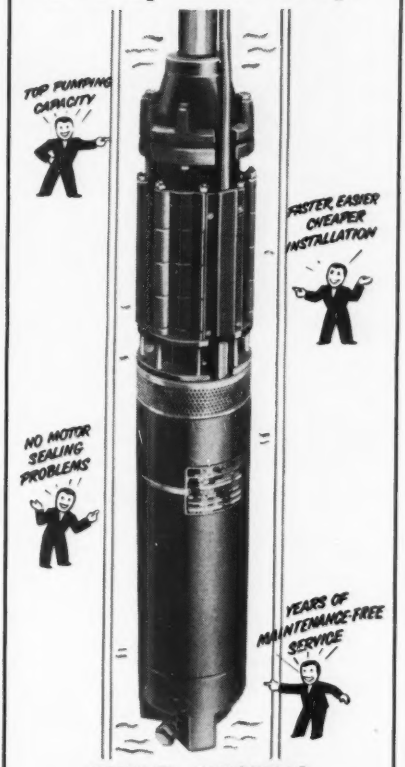
Two State Associations Announce Meetings

Ohio

A very interesting and successful meeting of the Ohio Well Drillers Assoc. was held May 17 at the Buckeye Supply Company's Main Office and plant at Zanesville, Ohio.

According to L. P. Cranz, President of the association, approximately 75 drillers were on hand, making

SUMO - the last word in Deep Well Pumps



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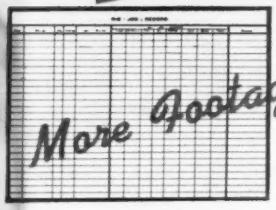
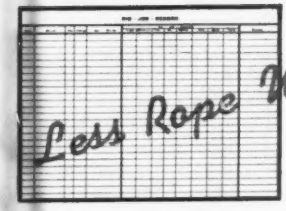
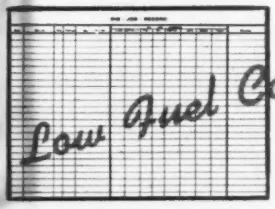


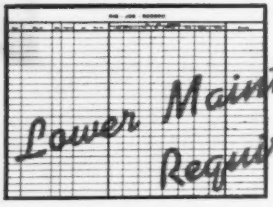
More Footage Per Day because Bucyrus-Eries combine an accurately-timed drilling motion with the famous B-E rubber-cushion shock absorber in the derrick head to produce sharp drilling blows with a quick up-swing — blows that mean high-speed penetration even in hard formations.



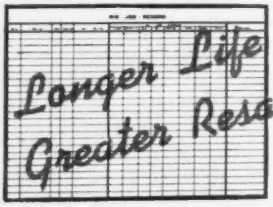
Less Rope Wear because Bucyrus-Erie's famous derrick-head shock absorber reduces stress on the drill cable. Sheaves over which the wire rope travels are big, providing a large bend radius which decreases line strain.



Low Fuel Consumption because Bucyrus-Eries transmit power directly to the point of action. Power travels direct from the jack-shaft through the spudding gear to the pitman and spudding beam. There's a minimum of moving parts, a factor which keeps power losses low.

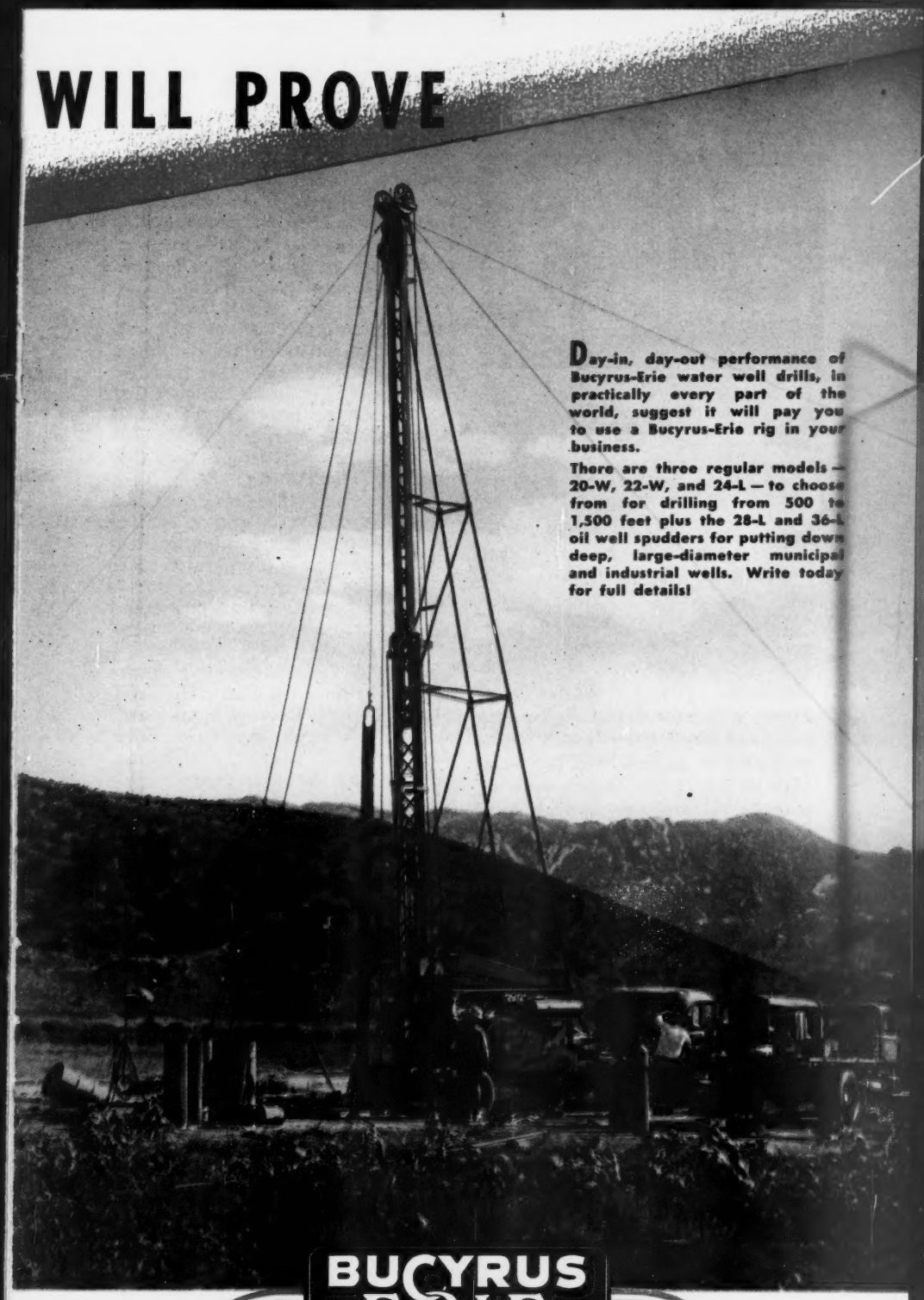


Lower Maintenance Requirements because Bucyrus-Erie drill frames and derricks are all electric-welded and rigidly braced to resist the stresses of long and sustained use. Box-section frame design provides for compact arrangement of machinery and easy access to all moving parts.



Longer Life . . . Greater Resale Value because Bucyrus-Eries are so designed that all functions are balanced for maximum efficiency in the drill's working range. This eliminates overstressing of parts . . . helps keep troubles away through years of tough service. 195W52C

WILL PROVE

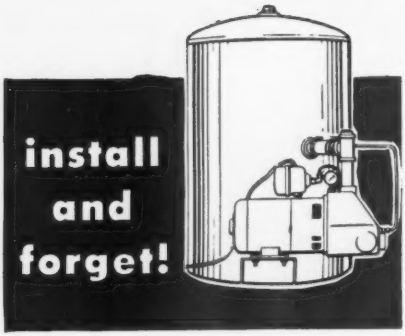


Day-in, day-out performance of Bucyrus-Erie water well drills, in practically every part of the world, suggest it will pay you to use a Bucyrus-Erie rig in your business.

There are three regular models — 20-W, 22-W, and 24-L — to choose from for drilling from 500 to 1,500 feet plus the 28-L and 36-L oil well spudders for putting down deep, large-diameter municipal and industrial wells. Write today for full details!

BUCYRUS ERIE

South Milwaukee, Wisconsin



FAIRBANKS-MORSE

Self-priming Pump

You get the kind of trouble-free water service every home owner wants when you install a Fairbanks-Morse self-priming shallow well water system.

This self-priming pump has only *one* moving part. It has no belts or gears to wear out. The ¼ hp. motor has lifetime sealed bearings at the pump end. Rotary seals prevent leakage between pump and motor. Pump is self-priming to depths of 25 feet. Will deliver as high as 600 g.p.h. Comes complete with 42-gal. tank, ready to plug in and use. For details see your Fairbanks-Morse dealer, or mail the coupon for complete information.

Fairbanks, Morse & Co.,
600 S. Michigan Ave.,
Chicago 5, Illinois.
Please send me full details on construction and operation of your self-priming shallow well pump.

Name.....

Address.....*RD*.....

City.....*State*.....

FAIRBANKS-MORSE,
a name worth remembering

this one of the best attended meetings in the association's history. Association officers in attendance at the meeting were L. P. Cranz, Ira, President; E. D. Allen, Steubenville, Executive Secretary and Treasurer; and V. J. Harley, Newark, Director.

The meeting started promptly at 11:00 AM with a lively half hour business session. This was followed by a very palatable Dutch lunch which was furnished by the host for the meeting, the Buckeye Supply Co. After lunch, equipment and product demonstrations were put on by The Plastex Pipe & Extrusion Co., Columbus, The Advance Pump Co., Alliance, and Bucyrus-Erie Co., South Milwaukee, Wisconsin, the latter company demonstrating both a 20-W drill and a one-quarter size scale working model of their new-style 22-W drill. Numerous other types of water well equipment were also displayed.

Between demonstrations a drawing was held for the glass casting rod and reel which Buckeye Supply presented as a registration prize, with Mr. Grover C. Blauser, Jr., Lancaster, holding the lucky ticket.

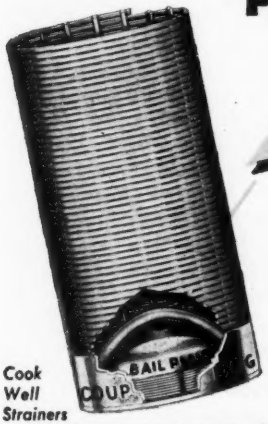
Pennsylvania — Western Div.

At a recent meeting of the western section of the Pennsylvania Water Well Contractors Assn., Inc., held at Beaver Falls, Pa., the election of officers for the coming year 1952-53, was the main event of the day. Those elected according to Secretary Muriel Butcher were: Owen W. Lininger, Greenville, President; C. J. Markel, Jeannette, Vice-President; Ralph Miller, Pittsburgh, Second Vice-President; and William B. Johnston, Pittsburgh, Third Vice-President.

Board of Directors elected for one year are: James Corby, DuBois, Fred Albright, Altoona, and Paul Wright, Bellefonte. Directors elected for two years are: Orion Freer,

PAYS OFF IN

Millions



Cook Well Strainers provide the most direct passage from the sand stratum into the well. Available in as many different sized slots as required. Made of the finest materials: Red Brass, American Everdur Brass, Armco Iron or Stainless Steel.

Three million gallons of nature's own *pure* water every 24 hours! That's the kind of day-after-day results the O. H. Acom Rice Farm of Wardell, Missouri is getting through 40 feet of Cook Wire Wound Bronze Well Strainer. And this is just one of the many thousands of agricultural and industrial deep-well installations that depend on Cook "50-year tested" Well Strainers. Write today for complete details and specifications.

COOK WELL STRAINER CO.
LAWRENCEBURG INDIANA

"World's Leading Name in Well Strainers"

JOHNSONITE
PLASTIC PIPE

- Odorless
- Tasteless
- Non-Toxic
- Corrosion-Proof
- Flexible or Rigid
- Acid Resistant
- 1½ Times Less Frictional Loss
- 13 Times Lighter Than Ordinary Pipe
- Adaptable To Standard Fittings

Complete Literature on Request

Out In The Open Or Out of Sight
The Right Plastic Pipe is Johnsonite

FOR INDUSTRIAL AND COMMERCIAL APPLICATIONS EVERYWHERE

JOHNSON
PLASTIC CORP.
BOX 268 • CHAGRIN FALLS, OHIO

Port Allegheny, Wayne Ferguson, Allison Park, and Jos. Heidelmeier, Washington.

Paul Boehm, Baden, Dwight Moody, Meadville, and Clifford Parker, Sharon, were elected to the board of directors for a three year term.

New Submersible Pump For Easy Installation

A feature of the new Model "B" ¾ hp 4-inch Sumo Electric Submersible Pump is quick, easy installation.

Installation is accomplished simply by lowering the close-coupled pump and motor unit down the well on the end of the riser pipe, mounting the control-box in a convenient location and making the necessary piping and wiring connections. The pump and motor operate completely under water. The unit is compact which permits its use in wells as small as 4-inch in diameter, as well as in crooked wells. Capacities range from 520 gph at 150 feet total head to 100 gph at 320 feet.

Built along the lines of the Sumo 6-inch, 8-inch and 12-inch submersibles the new 4-inch model pump has an all bronze and stainless-steel construction. The electric motor is water-filled, eliminating any sealing problems.

Full details can be obtained from any authorized dealer or by writing Dept. No. 24, Sumo Pumps, Inc., Stamford, Conn.

Goulds Announces New Water System

Production of a new, completely-packaged tank-mounted deep-well water system has been announced by Goulds Pumps Inc., Seneca Falls, N. Y.

The unit, called Figure 3681 is

(Continued on page 24)

Greatest Name in Cable Tools

Fig. 236 Corrugated Friction Socket

ACME

TRUSTWORTHY SINCE 1900

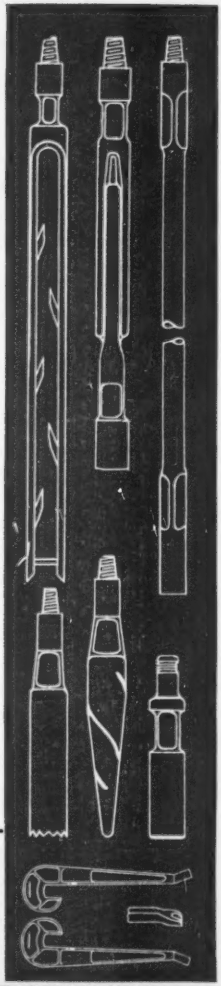
For Quick Pickout Jobs, Bits or Other Loose Objects . . .

Use Acme's Corrugated Socket

Because of its body corrugations, this Acme Socket will take better friction hitch than any horn socket. Withstands moderate amount of jarring.

Often it's possible to get friction hitch on lost bits with this "funny looking" tool, when it isn't possible to run a combination or slip socket.

Being necessary to drive Acme's Corrugated Socket down over lost tools, it's best to run on set of long stroke jars with stem above jars.



The tool featured above — one of 95 in our new Catalog — is fashioned by 51-years of superior "know-how" . . . providing more of EVERYTHING needed in an Acme String.

Mail penny postal NOW for your FREE copy of Acme's new 32-pg. Catalog and Tool-use Manual —expressly compiled and packedful of "cashable" information for Water Well Drillers.

Acme Fishing Tool Co.

PARKERSBURG, W. VA.

To-be-Sure—Always Ask for Acme's.

BITS from the wit sharpener

Drunk: "Ho! Lady, you got two ver' beautiful legs."

Girl (snapping): "How would you know?"

Drunk (brightly): "I counted 'em."

Two Negro boys were having an argument about ghosts. One of them claimed to have seen a ghost the night before.

"What was dis here gos' doin' when you las' seen him?" asked the doubting one.

"Jes' fallin' behin', mistah; fallin' behin'."

"What do you think of the two candidates?"

"Thank goodness only one of them will be elected."

In a crowded train, a salesman sat down beside a young woman who fought a desperate but losing battle to keep her skimpy skirt from creeping over her knees. After another futile yank, she looked up to meet the gaze of her traveling companion. "Don't stretch your calico, sister," he said, "my weakness is liquor!"

He: "How about a spin in the country?"

She: "Not tonight, dear, I'm too tired. Let's run out of gas right here."

The doctor was questioning the new nurse about her patient.

"Have you kept a chart of his progress?" he queried. The nurse blushingly replied: "No but I can show you my diary."

After the accident both drivers got out and each apologized profusely.

"I'm very sorry madam" the gentleman said, "I could have avoided this."

"Oh no," she replied, "It was my fault, I was on the wrong side of the road."

"But I insist I was to blame," he answered, "I saw you coming from three blocks away and had plenty of time to turn down a side street."

Pa: "It's two o'clock—'bout time Sally's boyfriend went home."

Ma: "Now—John—just remember how we used to court?"

Pa: "That settles it! Out he goes!"

A district attorney was having trouble with one of the witnesses, a rather pugnacious old man.

"Are you acquainted with any of the jurymen?" asked the district attorney.

"More than half," grunted the witness.

"Are you willing to swear that you know more than half of them?"

The old man flicked a glance over the jury box. "If it comes to that," he drawled, "I'm willing to swear I know more than all of them put together."

Country Constable: "Pardon miss, but swimming is not allowed in this lake."

City Glamor Girl: "Why didn't you tell me before I got undressed?"

Constable: "Wal, shucks, miss, they ain't no law against undressin'."

Your best recommendation...

GOULDS JET-O-MATIC

Your recommendations count. As the first man called in for the installation of running water service, your experience and "know-how" carry plenty of weight with your customers. That's why we value your recommendation of our Jet-O-Matic unit.

But recommendations can work both ways. The efficient, trouble-free water service delivered by every Jet-O-Matic water system is *a solid recommendation for you!*

Goulds Jet-O-Matic units range from ¼ H. P. to 5 H. P.; capacities to 4120 G. P. H.... they're dual service pumps, using the same basic unit for either shallow or deep well installation. They're engineered by Goulds, the world's largest manufacturer of pumps exclusively ... backed by a century of practical experience. Recommend them—they'll recommend you.

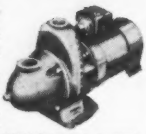
Write for details on the complete Goulds line... including working heads for depths to 500 feet.

GOULDS PUMPS INC. • **Seneca Falls, N.Y.**

GOULDS WATER SYSTEMS
Since 1848
FOR EVERY FARM AND HOME NEED

There is *nothing* finer

AURORA-JET WATER SYSTEMS



It's what you have been looking for. The most modern of the ejector water systems — quick conversion from shallow to deep well. For EVERY home, farm, estate and institution water supply requirement. PACKAGED INVENTORY promotes accuracy and prompt service and lessens inventory investment. Backed by AURORA — means prestige for you; economy and satisfaction for your customers.

SHALLOW WELL

DEEP WELL

SIZES UP TO 4,500 G.P.H.

Write for Description

AURORA Always PUMPS — AURORA PUMP COMPANY

58 Loucks St., Aurora, Illinois

WATER LEVEL INDICATOR

THE NEW MASTER WL FEATURING:

- SMALL, 3/8" D., ELECTRODE.
- TWO CONDUCTOR CABLE, NO CASING OR OUTSIDE CONNECTIONS NEEDED.
- METAL TAG CABLE CALIBRATION.
- HANDY REEL TYPE SPOOL.

250 ft. WL $37.50 f.o.b. Palo Alto*
500 ft. WL $47.50 f.o.b. Palo Alto*

*Includes one Extra Electrode
Additional Electrodes $1.00 each.

FISHER RESEARCH LAB., Inc.
PALO ALTO CALIF.

News . . .

(Continued from page 20)

designed to fill the need for a complete system for wells in which the pumping level of the water is not more than 50 feet below the pumping unit. The system has a capacity rating up to 450 gph. It measures 33 inches long by 14 inches wide by 29 inches high, including the 17-gal. galvanized tank. Operating sound is minimized by specially designed rubber mountings and connections.

All cast iron parts coming in contact with water are protected with a baken-on coating to resist rust and corrosion in the pump.

With its self-priming feature, it automatically resumes operation when the foot valve is again submerged after any temporary "dry season" drop in water level. The unit eliminates the stuffing box by using a mechanical seal.

This system can be set away from the well, allowing installation in a basement with the pipes below frost line and thus being fully protected from freezing.

The unit comes complete with all necessary accessories. Further information and descriptive literature is available by writing to the company.

U. S. Electrical Announces Motor Improvements

Recently added to the line of U. S. vertical motors are a series of single phase hollowshaft motors, types SCU-C and SCU-R. An improved and simpler method of disconnecting the starting capacitors has been initiated into this line of motors. The accelerating type relay, formerly a centrifugal switch, was used. The single phase vertical motor is designed to provide maximum performance with positive relay opera-

tion over the widest variation in line voltage.

Available from 1½ to 5 hp with speeds of 1,800 to 3,600 rpm, the SCU-C and SCU-R motors offer such features as asbestos protection of windings, Lubriflush lubrication, normalized castings, solid centricast rotor, down-draft ventilation, adustable hollowshaft, reverse protection clutch, conservatively rated capacitors and weatherproof housing. For an 8-page bulletin describing these motors, write to U. S. Electrical Motors, Inc., 200 E. Slauson Ave., Los Angeles 54, Calif.

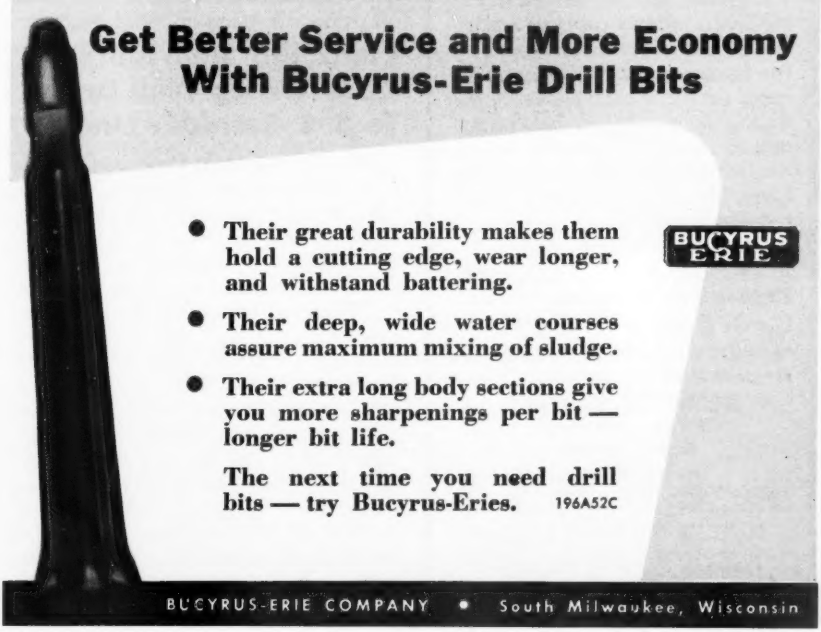
Design Improvements In Ingersoll-Rand Pumps

Ingersoll-Rand Co. recently announced design improvements in its existing line of small, single-stage, double-suction pumps. These pumps, known as the Class DMV-DHV, are the first to incorporate double mechanical shaft seals with sealed, pre-lubricated ball bearings.

Built in 3, 4, 5 and 6-in. sizes, the DMV, for medium heads, and the DHV, for high heads, are designed for general hydraulic services at temperatures up to 200° F., capacities to 2,100 gpm and pressures to 150 psi.

The use of a double shaft-seal affords more efficient sealing and prevents air leakage into the pump when it is operating under suction lift. The double seal also has a longer service life under conditions when the pump is handling gritty and abrasive liquids, since external sealing liquid is injected to the seal box under pressure, lubricating the seal faces and preventing the gritty fluid from reaching them.

The cartridge type, permanently lubricated ball bearings, successfully used in motors of nationally known


Get Better Service and More Economy
With Bucyrus-Erie Drill Bits
Their great durability makes them hold a cutting edge, wear longer, and withstand battering.
Their deep, wide water courses assure maximum mixing of sludge.
Their extra long body sections give you more sharpenings per bit — longer bit life.
The next time you need drill bits — try Bucyrus-Eries. 196A52C
BUCYRUS ERIE
BUCYRUS-ERIE COMPANY • South Milwaukee, Wisconsin

MACWHYTE
HI-LASTIC
WIRE LINE

For sharper, harder blows!

The greater elasticity of Macwhyte Hi-Lastic allows tools to strike sharper, more powerful blows . . . for faster, smoother drilling. It keeps the bit turning better . . . reduces tendency for the hole to get out of round and for the bit to channel. Like all Macwhyte Wire Lines, Macwhyte "Hi-Lastic" is internally lubricated.

Send for Circular No. 49-14R

It lists and describes Macwhyte Drilling and Sand Lines.

Get the correct line for your equipment from any Macwhyte distributor or mill depot or write to:

MACWHYTE COMPANY
2939 Fourteenth Avenue
Kenosha, Wisconsin

Mill Depots:

New York 4, 35 Water Street
Pittsburgh 19, 704 Second Avenue
Chicago 6, 228 So. Desplaines St.
Minneapolis 3, 1213 Harmon Place
Ft. Worth 1, P. O. Box 605
Portland 9, 1603 N.W. 14th Avenue
Seattle 4, 87 Holgate Street
San Francisco 7, 141 King Street
Los Angeles 21, 2035 Sacramento St. 1013

make, are packed with lubricant by the manufacturer and require no further lubrication throughout their service life.

Casing design has been made compact and simple. The elimination of stuffing boxes has decreased the shaft length between bearings, making the carefully finished shaft more rigid. The shaft is not threaded, reduced or slotted at any point over its unsupported length. The impeller is attached by a shrink fit, similar to the method of mounting high pressure turbine wheels.

Through standardization possible with this design, three spare parts kits serve all eight pumps in the DMV-DHV line. These specially designed kits contain all the parts any mechanic would require to restore the pump to its original performance.

Further information is available from the manufacturer on request—Ingersoll-Rand Co., Department CAM, 11 Broadway, N. Y. 4.

Canadian Distributor Adds Water Well Drills To B. E. Spudder Line

The Tillsonburg Pipe and Supply Co., Tillsonburg, Ontario, Canada, was recently named distributor for Bucyrus-Erie 20-W and 22-W water well drills, according to an announcement from the manufacturer.

This distributor has handled Bucyrus-Erie oil well spudders for several years. The recently added 20-W and 22-W, along with the 24-L and 28-L originally designed for oil well work, but very popular with water well drillers specializing in large diameter holes, give the Tillsonburg company a complete line of truck, trailer or skid mounted water well drills capable of drilling 4- to 16-in. holes to 2,500 feet.

The Canadian firm serves that

part of the Province of Ontario south and west of and including the counties of Essex, Kent, Lambton, Huron, Bruce, Grey, Simcoe, Muskoka, Perry Sound, Haliburton, Peterborough and Northumberland.

Supporting sales with outstanding service is the long established policy of the Tillsonburg Pipe and Supply Co. Its experienced staff is familiar with the drilling problems of its territory and anxious to assist Ontario's drillers with information and advice on drilling problems and equipment.

Fresh Water Dike . . .

(Continued from page 11)

feasible. Such a project would involve a large number of injection wells. The Manhattan Beach field experimental project is confined to a length of about one mile along the coast.

When the first eight wells are finished, a pressure water line will be laid and more extensive injections will then be made. The eight wells have been spaced to form a part of the completed installation, but the spacing and other characteristics of the wells remaining will depend on what data the engineers are able to amass. Eventually, if the fresh water ridge proves to be as successful as it now indicates, the Hyperion effluent may be hooked on to maintain the fresh water ridge.

Personnel

Many people have taken a large part in the Manhattan Beach experiment and other studies. Water engineer Oswald A. Gierlich of Manhattan Beach, for example, did much to arouse the interest of state engineers and others to the plight of underground water resources around his city.

(Continued on page 30)

Pump Handle Pete Says:

Smart Drillers Recommend JENSENS

Water well drillers know that a well is no better than its pumping equipment. This includes the surface equipment.

The many drillers who recommend and install Jensen Pumping Units know from experience they are practical and economical. Their repeat orders prove their judgment correct.

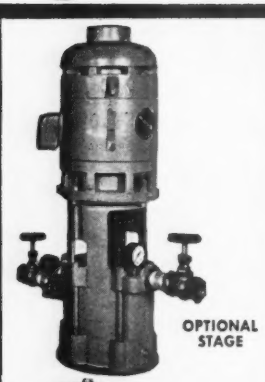
Jensen has been making pumping units for 33 years. Drillers find this long experience valuable.

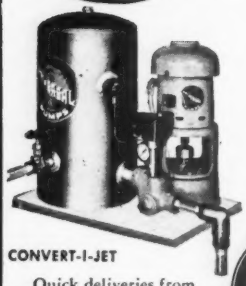
Let us send you a folder that shows all the important mechanical features of Jensen Units. Write for it today, or ask your favorite supply store to write to 1016 Fourteenth St., Coffeyville, Kan.

JENSEN BROS. MFG. CO. INC.

Coffeyville, Kan., U.S.A.

UNIVERSAL PUMPS and Water Systems can really.. take HARD USAGE





CONVERT-I-JET

Quick deliveries from warehouses at Atlanta, Ga.; Houston, Texas; Kansas City, Mo.

UNIVERSALS are rugged, trouble-free. They are built to stand up under the tough, exacting demands of 24-hour service. They give you more water at lower cost.

OPTIONAL STAGE, precision-machine for lifts from 50′ to 300′. Ideal for domestic use, farms, wherever water tables are deep.

CONVERT-I-JET—Automatic self-primer for lifts not exceeding 25′ at or near sea level.

UNIVERSAL offers a complete line of injector and centrifugal pumps and water systems, for homes, farms, industry.

Send for Catalog.

102

UNIVERSAL MFG. CO.

1440 SAN PABLO AVE., DEPT D-6
BERKELEY 2, CALIFORNIA

"There's a Universal for you!"

BARGAIN counter

Mail all box inquiries care of THE DRILLER, South Milwaukee, Wis.

DRILLS FOR SALE

Armstrong bandwheel rig. New steel cracker. 5/8" line and 5" string. LeRoi power. Many extras. On duplex truck. Under $1000. Located in New Richmond, Wis. Write F. Renner, 2900 Alabama Ave., Mpls. 16, Minn.

42 Cyclone mounted on '41 Chev, 2 yrs. old. In excellent condition. Complete string of 6 and 8" tools. Will sacrifice. Phone 2-3923. D. Wynes, 3818—15th St. "C", Moline, Ill.

1949 #44 O.F. Cyclone machine, truck mounted, good shape—$5150. 20-W Bucyrus, truck mounted. Lines and 4 & 6" tools—$2975. Good 240 Star, truck mounted. Tools and lines—$1775. 240 Star with new power unit, truck mounted. Reconditioned & painted—$1950. R. R. Long, Jacksonville, Ill.

Repossessed practically new 1950 Ideco No. 16 on 1945 GMC 6x6 truck driven only 10,322 miles. Bargain at $4000 cash. Southern Pipe & Supply Co., 630 West Church St., Orlando, Florida.

#71 Star, mounted on 1934 GMC 3-ton, 6-wheel drive truck. Truck has new 1951 engine and transmission. Patented hydraulic jack system permits simultaneous drilling and casing. Level wind automatic spooling device on bull reel. 6" and 10" drilling scows, drill and drill stem, jacks, wire cables, tackle blocks, etc. Truck and rig completely overhauled 1951: have not been used since. J. A. Bray, 3075 Telegraph Ave., Berkeley 5, Calif.

1947 #17 Star on 2-ton Dodge truck. Lines, 6" tools & extras. Excellent condition, best offer takes it. C. L. Jennelle, Rt. 4, Staunton, Va. Ph. 5-2930.

DRILLS FOR SALE

Bucyrus-Erie 22-W drill. Two years old, mounted on a 1932 International 2-ton truck with good rubber, no casing reel just a tool guide, power derrick hoist, drill tools and cables. A-1 condition.
Box 474

1951 Cyclone Model 42 on 1940 Dodge truck. Complete string 6" tools, 500' 3/4" & 7/8" cables, all in excellent condition. C. H. Eichelberger, R. 2, Mechanicsburg, Pa., Phone 5810 after 6 PM.

Bucyrus-Erie 24-L drilling rig mounted on good 6x6 GMC Army truck. 48 ft. derrick, casing strut, power derrick lift, swab gear and catheads, good drill lines, complete string 5" to 12" tools. Derrick floor and metal dog house.

5½ Keystone drill rig, trailer mounted, good lines. Call or write Wayne Gale, Dale, Indiana. Phone 239R.

#71 Speed Star, on 2-ton truck. Very good condition. $2275 without tools. F. N. Hagmann, Jr., Vienna, Va.

Bucyrus-Erie 21-W, truck mounted, working every day. In good condition.

No. 35 Armstrong, in good condition, working every day. 500 feet sandline and 500 feet drill line included on each machine. No tools. L. L. May, Rte. 13, Box 432, Milwaukee 7, Wisconsin. Phone SO 2-3230.

Home-made machine with 35' all steel derrick with Bucyrus-Erie shock absorber and power derrick hoist. 700' capacity machine powered with Waukesha XA-226X engine. Located in Indiana. Price $1500. J. B. Ortman & Sons, Route #1, Kokomo, Indiana. Phone 23427.

Bucyrus-Erie 36-L for sale, new 1950, Cummins diesel motor, trailer mounted with vacuum brakes, casing strut, spooling device, tension clamp, pulley extension, tool crane. Rig is completely equipped with all tools and casing equipment for 8", 6" and 5" holes, including steel doghouse and fuel house trailer mounted, Kohler light plant, 8" drive tools. New 3500 ft. drill line, and sand line. Rig has never drilled below 1800 ft. and is like new. Box 470

DRILLS FOR SALE

#240 Star, 4 years old, mounted on a 1934 Ford 1½-ton, long-wheel base truck. Equipped with cathead, pipe braces and engine throw-out clutch. Will sell with or without 4" tool string, 600' of 5/8" drilling line and 300' of 7/8" sand line. In A-1 condition. Located in Indiana. Box 468

1949 Model 21-W Bucyrus-Erie drill in good condition. This machine is mounted on a 1937 International two-speed axle truck. Equipment includes new 5/8" drill line, 6" & 8" tools, 2¼"x3¼"-7 API joints. Price $3150. Machine is now working near Okarche, Oklahoma. Clarence Schroeder, Okarche, Oklahoma. Phone 29-F-2.

Five Bucyrus-Erie 29-T drills, 440 v., 3 phase, 60 cycle, electric power, complete with tools and a stock of spare parts. Also one Bucyrus-Erie No. 12 bit dresser. Location, Middle West. Box 471

All-steel double beam jetting machine with 32' telescoping derrick. Mounted on 4-wheel trailer with 6.50x16 pneumatic tires. Trailer has low speed self-propelling attachment for maneuvering on location. Power derrick hoist and cathead. Powered with 7½ H.P. Fairbanks Morse diesel engine. Complete with 2" jetting tools, drill rods, maul and 3x12 duplex pump. Located in Indiana. Price $1750 complete.
Box 469

Well equipment. Good used spudders, rotaries, tools. We sell them. We buy them. Contact us if you want to buy or sell. We rent fishing tools. Everything for well drilling. Write or phone. Pressey & Son, Pueblo, Colo.

Used Cyclone drilling machine, heavy duty.

Used Chapman drilling machine.

Two used Bucyrus-Erie Model 21-W drilling machines with or without tools.

Tillsonburg Pipe and Supply Co., Limited, Box 65, Tillsonburg, Ontario, Canada, Phone 437.

(Continued on page 30)

MISC. FOR SALE

(Continued from page 29)

Pipe for Sale

New 3" galvanized standard well drillers pipe—21' lengths. Box 473

LeRoi power unit. Suitable for 240 Star. Reduction gear & pulley. $150. R. R. Long, R. R. #6, Jacksonville, Ill.

Crawler type Loomis Models 44 and diesel driven 88. Priced for quick sale. Phone 4849-R or write P.O. Box 552, Pottsville, Pa.

Ford 1½-ton F5 6 cyl. truck 1948. $1050.
20-W trailer mt. telescope tower. $2950.
22-W truck mt. telescope tower. $3250.
33-W trailer mt. telescope tower. $1750.
Water trailer (Army) 250 gal. aluminum tank. 7.50x20 tires. $250.
Underreamer (almost new) Acme 3 blade to run in 8" line pipe cut 10" hole. $535.
Drilling tools for sale 4" to 10". J. Bolliger Sons, Fairbury, Ill.

MISC. FOR SALE

Drive pipe, Spang drilling tools, Keystone drilling tools, Larkin drive shoes and well seals, Wickwire drilling cable, drive couplings, plastic and copper pipe. Water pumps. Machine shop work. Fishing tools for rent. The only complete well drilling supply house in Northern New York. J. G. Piscitelli & Son, Lower Maple St., Hudson Falls, N. Y. Tel. 4-5806.

POSITIONS WANTED

Driller. 12 years experience on all type rigs and settings of all types of pumps and plumbing. Welding & machine shop experience. Married, age 31, desires steady work in midwest. James Jardee, Stuart, Neb.

Experienced driller seeking a regular job. M. T. Hales, 324 Tucker Street, North Chattanooga, Tenn.

EQUIP. WANTED

Wanted: We buy good used well drilling equipment, spudders, rotaries, core drills, tools. Everything for well drilling and well service. Pressey & Son, Pueblo, Colo.

4½" or 5"x16' stem, 2x3-8 joints, bits 4" to 7". F. D. Shoemaker, Box 107, Timpas, Colorado.

PROFIT SHARING HOOKUP, WANTED

Established my own pump and drilling business in Northern Indiana in the Spring of 1922. Have a light cable tool rig truck mounted, rigged for jetting 2" and 3" wells at present, also have small shop tools and office equipment, enough to carry on a two or three man business. Have done both rock and drift drilling and can handle anything in the domestic pump line. Am 54 years of age, would like to make a profit sharing,or partnership hookup with a driller, located in 2" to 4" territory, preferably in a small town. Box 462

DEALERS WANTED

To Handle *Fast Moving*

LOCK-JOINT

Portable Irrigation Systems

You know modern farmers don't wait for rain —*They drill wells* and then irrigate.

Don't let your profit STOP AT THE WELL —Sell your client an FMC Lock-Joint System Complete with valves and matched fittings.

Write today for information about dealerships.

fmc FOOD MACHINERY AND CHEMICAL CORPORATION

Florida Division—Drawer DR-1
Lakeland, Florida

Fresh Water Dike

(Continued from page 27)

So far as the California Division of Water Resources is concerned, the name of State Engineer A. D. Edmonston deserves high mention, for the project is going forward under his general supervision. Harvey Banks is Principal Hydraulic Engineer in charge of this and other state wide investigations concerning water quality. E. C. Marliave is the supervising Engineering Geologist and J. J. Coe is Associate Hydraulic Engineer.

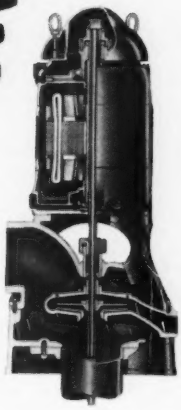
The Los Angeles County Flood Control District is headed by H. E. Hedger, Chief Engineer.

In the next and last installment, the story of M. R. Peck and Sons will be detailed to show the part practical experience is playing in this highly complex hydraulic engineering project.

TWO

FOR THE PRICE OF

ONE



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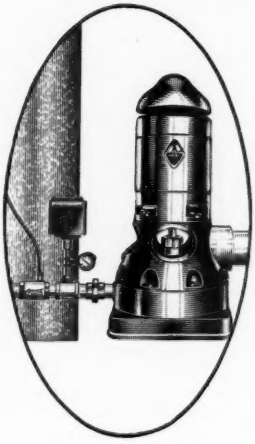
Jacuzzi

DUAL DISCHARGE

TURBINE PUMP

It's a high capacity irrigation pump *and* a water system, yet is only one pump.



Investigate Jacuzzi for any pump or water system installation.

Mr. Driller, you're usually *there* when the pump is being selected. You can do your customers a favor by suggesting that they investigate Jacuzzi Dual Discharge turbines if they need both an irrigation pump and a home water system. They get the service of TWO but pay for only ONE.

Point out these exclusive Jacuzzi features: booster impeller (see cut above) in pump head is below the pump discharge and *can't* run "dry." And the pump packing is such that it works only against the low pressure water for irrigation. This means LONGER packing life.

A Few Choice Dealerships Available

For details, send coupon below

JACUZZI BROS. INC. • Richmond, California

Send me information as checked

☐ Dual Discharge Turbines ☐ Regular Turbines

☐ Deep Well Jet Pumps ☐ Shallow Well Pumps

☐ Interested in Dealership

NAME_____

ADDRESS_____

CITY_____

More than 100 drillers and contractors attended the inaugural meeting of the Ontario Water Well Drillers Association held May 31 in Tillsonburg, Ontario, Canada. Part of the group is shown outside the Tillsonburg Pipe and Supply Co., Ltd. building where the meeting was held.

The Driller

The monthly magazine for water well drillers

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